

**THE  
DOE RUN  
COMPANY**

*Remediation Group*

**Mark Nations**  
**Mining Properties Manager**  
**mnations@doerun.com**

January 10, 2014

Mr. Jason Gunter  
Remedial Project Manager  
U.S. Environmental Protection Agency  
Region 7 - Superfund Branch  
11201 Renner Blvd.  
Lenexa, KS 66219

**Re: The Doe Run Company - Leadwood Mine Tailings Site Monthly Progress Report**

Dear Mr. Gunter:

As required by Article VI, Section 50 of the Unilateral Administrative Order (Docket No. CERCLA-07-2006-0272) for the referenced project and on behalf of The Doe Run Company, the progress report for the period December 1, 2013 through December 31, 2013 is enclosed. If you have any questions or comments, please call me at 573-518-0800.

Sincerely,



Mark Nations  
Mining Properties Manager

Enclosures

- c: Mark Yingling – TDRC (electronic only)
- Matt Wohl – TDRC (electronic only)
- Robert Hinkson – MDNR
- Brandon Wiles – MDNR
- Ty Morris – Barr Engineering

DTCR



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**Leadwood Mine Tailings Site**  
Leadwood, Missouri  
**Removal Action - Monthly Progress Report**  
Period: December 1, 2013 – December 31, 2013

**1. Actions Performed or Completed This Period:**

- a. None.

**2. Data and Results Received This Period:**

- a. During this period, water samples were collected from downstream of Leadwood Dam and the East Seep and Erosion Area, as well as from upstream and downstream of the confluence of Eaton Creek with Big River. The analytical results for this event are included with this progress report.
- b. During this period, the Ambient Air Monitoring Reports for September 2013 and Third Quarter 2013 were completed. Any issues identified in these reports are discussed below. A copy of these documents has been sent to your attention.

The September 2013 Ambient Air Monitoring Report noted the following:

- The action levels for lead and dust were not exceeded.
- No samples were taken with the TSP monitors on 9/2/13 due to the holiday.
- There was a QA blank filter for the Big River #4 and Big River #4 QA TSP and PM<sub>10</sub> monitors on 9/16/13.
- No sample was taken on the Big River #4 TSP monitor on 09/18/13 due to a mechanical failure. Upon discovery, this issue was addressed.
- No sample was taken on the Big River #4 TSP monitor on 09/20/13 due to an issue with the timer. Upon discovery, this issue was addressed.

The Third Quarter 2013 Ambient Air Monitoring Report noted the following:

- The action levels for lead and dust were not exceeded.
- No samples were taken with the TSP monitors on 07/04/13 and 07/05/13 due to the holiday.
- No samples were taken with the PM<sub>10</sub> monitors on 07/06/13 due to the holiday.
- No sample was taken on the Leadwood #3 (School) PM<sub>10</sub> monitor on 07/12/13 due to the run time of the monitor being outside of the acceptable limits. This issue has been addressed.
- No sample was taken on the Leadwood #2 (Office) TSP monitor on 07/24/13, 07/25/13, and 07/31/13 due to the run time of the monitor being outside of the acceptable limits. These issues have been addressed.
- No sample was taken on the Big River #4 TSP monitor on 07/29/13 due to the run time of the monitor being outside of the acceptable limits. This issue has been addressed.
- Chain-of-custody date issues were corrected for the Big River #4 QA TSP monitor for filter ID numbers 8803575 and 8803551.
- No sample was taken on the Leadwood #2 (Office) TSP monitor on 08/01/13 due to an issue with the timer. Upon discovery, this issue was addressed.
- No sample was taken on the Leadwood #2 (Office) PM<sub>10</sub> monitor on 08/05/13 due to a mechanical failure. Upon discovery, the ETI was replaced.
- No sample was taken on the Leadwood #3 (School) PM<sub>10</sub> monitor on 08/11/13 due to a mechanical failure. Upon discovery, this issue was addressed.
- There was a QA blank filter for the Leadwood #1 (Wortham) TSP and PM<sub>10</sub> monitors on 8/12/13.
- No sample was taken on the Leadwood #3 (School) PM<sub>10</sub> monitor on 08/14/13 due to an electrical failure. Upon discovery, this issue was addressed.

- No sample was taken on the Leadwood #2 (Office) PM<sub>10</sub> monitor on 08/23/13 due to an issue with the timer. Upon discovery, this issue was addressed.
- No samples were taken with the TSP monitors on 9/2/13 due to the holiday.
- There was a QA blank filter for the Big River #4 and Big River #4 QA TSP and PM<sub>10</sub> monitors on 9/16/13.
- No sample was taken on the Big River #4 TSP monitor on 09/18/13 due to a mechanical failure. Upon discovery, this issue was addressed.
- No sample was taken on the Big River #4 TSP monitor on 09/20/13 due to an issue with the timer. Upon discovery, this issue was addressed.

**3. Scheduled Activities not Completed This Period:**

- a. None.

**4. Planned Activities for Next Period:**

- a. Continue vegetation maintenance activities. The use of biosolids will only be continued if a biosolids management plan has been submitted to and approved by EPA.
- b. Complete monthly water sampling activities as described in the Removal Action Work Plan.
- c. Complete air monitoring activities as described in the Removal Action Work Plan.

**5. Changes in Personnel:**

- a. None.

**6. Issues or Problems Arising This Period:**

- a. None.

**7. Resolution of Issues or Problems Arising This Period:**

- a. None.



Pace Analytical Services, Inc.  
9608 Loiret Blvd.  
Lenexa, KS 66219  
(913)599-5665

January 10, 2014

Amy Sanders  
The Doe Run Company  
P. O. Box 500  
Viburnum, MO 65566

RE: Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

Dear Amy Sanders:

Enclosed are the analytical results for sample(s) received by the laboratory on December 31, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jamie Church

jamie.church@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

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### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
WY STR Certification #: 2456.01  
Arkansas Certification #: 13-012-0  
Illinois Certification #: 003097  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055  
Nevada Certification #: KS000212008A  
Oklahoma Certification #: 9205/9935  
Texas Certification #: T104704407-13-4  
Utah Certification #: KS000212013-3  
Illinois Certification #: 003097

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## SAMPLE SUMMARY

Project: NPDES Monthly (Leadwood)

Pace Project No.: 60160522

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60160522001	LEADWOOD 001	Water	12/30/13 12:40	12/31/13 08:15
60160522002	LEADWOOD 002	Water	12/30/13 12:26	12/31/13 08:15
60160522003	LEADWOOD UPSTREAM	Water	12/30/13 10:17	12/31/13 08:15
60160522004	LEADWOOD DOWNSTREAM	Water	12/30/13 10:37	12/31/13 08:15

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### SAMPLE ANALYTE COUNT

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60160522001	LEADWOOD 001	EPA 200.8	SMW	3	PASI-K
		SM 2540D	RAH	1	PASI-K
		SM 2540F	RAH	1	PASI-K
		EPA 300.0	OL	1	PASI-K
60160522002	LEADWOOD 002	EPA 200.8	SMW	3	PASI-K
		SM 2540D	RAH	1	PASI-K
		SM 2540F	RAH	1	PASI-K
		EPA 300.0	OL	1	PASI-K
60160522003	LEADWOOD UPSTREAM	EPA 6010	TDS	3	PASI-K
		EPA 200.8	SMW	3	PASI-K
		EPA 200.8	JGP, SMW	3	PASI-K
		SM 2540D	RAH	1	PASI-K
		EPA 300.0	OL	1	PASI-K
60160522004	LEADWOOD DOWNSTREAM	EPA 6010	TDS	3	PASI-K
		EPA 200.8	SMW	3	PASI-K
		EPA 200.8	SMW	3	PASI-K
		SM 2540D	RAH	1	PASI-K
		EPA 300.0	OL	1	PASI-K

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## ANALYTICAL RESULTS

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

Sample: LEADWOOD 001      Lab ID: 60160522001      Collected: 12/30/13 12:40      Received: 12/31/13 08:15      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Cadmium	2.9	ug/L	0.50	0.050	1	01/02/14 09:20	01/03/14 11:52	7440-43-9	
Lead	2.7	ug/L	1.0	0.030	1	01/02/14 09:20	01/03/14 11:52	7439-92-1	
Zinc	2680	ug/L	10.0	1.0	1	01/02/14 09:20	01/03/14 11:52	7440-66-6	
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	5.0	5.0	1		01/06/14 13:51		
<b>2540F Total Settleable Solids</b> Analytical Method: SM 2540F									
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		12/31/13 13:53		
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Sulfate	307	mg/L	50.0	8.0	50		01/10/14 10:17	14808-79-8	

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## ANALYTICAL RESULTS

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

Sample: LEADWOOD 002      Lab ID: 60160522002      Collected: 12/30/13 12:26      Received: 12/31/13 08:15      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Cadmium	5.0	ug/L	0.50	0.050	1	01/02/14 09:20	01/03/14 12:00	7440-43-9	
Lead	7.2	ug/L	1.0	0.030	1	01/02/14 09:20	01/03/14 12:00	7439-92-1	
Zinc	7300	ug/L	10.0	1.0	1	01/02/14 09:20	01/03/14 12:00	7440-66-6	
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	5.0	5.0	1		01/06/14 13:51		
<b>2540F Total Settleable Solids</b> Analytical Method: SM 2540F									
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		12/31/13 13:53		
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Sulfate	511	mg/L	50.0	8.0	50		01/10/14 10:33	14808-79-8	

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## ANALYTICAL RESULTS

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

Sample: LEADWOOD UPSTREAM Lab ID: 60160522003 Collected: 12/30/13 10:17 Received: 12/31/13 08:15 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b> Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Calcium	35400	ug/L	100	10.4	1	12/31/13 13:00	01/03/14 10:51	7440-70-2	
Magnesium	20600	ug/L	50.0	6.5	1	12/31/13 13:00	01/03/14 10:51	7439-95-4	
Total Hardness by 2340B	173000	ug/L	500	500	1	12/31/13 13:00	01/03/14 10:51		
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	ND	ug/L	0.50	0.050	1	01/02/14 09:20	01/03/14 12:04	7440-43-9	
Lead	0.19J	ug/L	1.0	0.030	1	01/02/14 09:20	01/03/14 12:04	7439-92-1	
Zinc	4.1J	ug/L	10.0	1.0	1	01/02/14 09:20	01/03/14 12:04	7440-66-6	B
<b>200.8 ICPMS, Dissolved (LF)</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	ND	ug/L	0.50	0.050	1	01/02/14 16:00	01/03/14 12:45	7440-43-9	
Lead, Dissolved	ND	ug/L	1.0	0.030	1	01/02/14 16:00	01/03/14 12:45	7439-92-1	
Zinc, Dissolved	18.8	ug/L	10.0	1.0	1	01/06/14 09:50	01/06/14 17:23	7440-66-6	B,D9
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	5.0	5.0	1		01/06/14 13:51		
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Sulfate	15.9	mg/L	2.0	0.32	2		01/10/14 10:48	14808-79-8	

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## ANALYTICAL RESULTS

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

Sample: **LEADWOOD DOWNSTREAM** Lab ID: **60160522004** Collected: 12/30/13 10:37 Received: 12/31/13 08:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b> Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Calcium	36200	ug/L	100	10.4	1	12/31/13 13:00	01/03/14 10:53	7440-70-2	
Magnesium	20700	ug/L	50.0	6.5	1	12/31/13 13:00	01/03/14 10:53	7439-95-4	
Total Hardness by 2340B	176000	ug/L	500	500	1	12/31/13 13:00	01/03/14 10:53		
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	ND	ug/L	0.50	0.050	1	01/02/14 09:20	01/03/14 12:09	7440-43-9	
Lead	0.30J	ug/L	1.0	0.030	1	01/02/14 09:20	01/03/14 12:09	7439-92-1	
Zinc	16.6	ug/L	10.0	1.0	1	01/02/14 09:20	01/03/14 12:09	7440-66-6	
<b>200.8 ICPMS, Dissolved (LF)</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	ND	ug/L	0.50	0.050	1	01/02/14 16:00	01/03/14 12:49	7440-43-9	
Lead, Dissolved	ND	ug/L	1.0	0.030	1	01/02/14 16:00	01/03/14 12:49	7439-92-1	
Zinc, Dissolved	29.7	ug/L	10.0	1.0	1	01/02/14 16:00	01/03/14 12:49	7440-66-6	B,D9
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	5.0	5.0	1		01/06/14 13:52		
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Sulfate	18.8	mg/L	2.0	0.32	2		01/10/14 11:34	14808-79-8	

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### QUALITY CONTROL DATA

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

QC Batch: MPRP/25783 Analysis Method: EPA 200.8  
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET  
Associated Lab Samples: 60160522001, 60160522002, 60160522003, 60160522004

METHOD BLANK: 1313701 Matrix: Water  
Associated Lab Samples: 60160522001, 60160522002, 60160522003, 60160522004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	01/03/14 10:59	
Lead	ug/L	ND	1.0	01/03/14 10:59	
Zinc	ug/L	1.5J	10.0	01/03/14 10:59	

LABORATORY CONTROL SAMPLE: 1313702

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	42.4	106	85-115	
Lead	ug/L	40	41.2	103	85-115	
Zinc	ug/L	100	112	112	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1313703 1313704

Parameter	Units	60159968005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Cadmium	ug/L	ND	40	40	41.1	41.3	103	103	70-130	1	20
Lead	ug/L	4.2	40	40	46.9	47.0	107	107	70-130	0	20
Zinc	ug/L	10.2	100	100	113	114	104	104	70-130	1	20

MATRIX SPIKE SAMPLE: 1313705

Parameter	Units	60160522001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	2.9	40	44.7	104	70-130	
Lead	ug/L	2.7	40	45.6	107	70-130	
Zinc	ug/L	2680	100	2780	101	70-130	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

QC Batch: MPRP/25790 Analysis Method: EPA 200.8  
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved  
Associated Lab Samples: 60160522003, 60160522004

METHOD BLANK: 1313779 Matrix: Water  
Associated Lab Samples: 60160522003, 60160522004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	01/03/14 13:50	
Lead, Dissolved	ug/L	0.098J	1.0	01/03/14 13:50	
Zinc, Dissolved	ug/L	3.7J	10.0	01/03/14 13:50	

LABORATORY CONTROL SAMPLE: 1313780

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	42.3	106	85-115	
Lead, Dissolved	ug/L	40	40.8	102	85-115	
Zinc, Dissolved	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1313781 1313782

Parameter	Units	60160521002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	ND	40	40	41.1	41.5	103	104	70-130	1	20	
Lead, Dissolved	ug/L	0.10J	40	40	41.8	42.4	104	106	70-130	1	20	
Zinc, Dissolved	ug/L	14.4	100	100	118	120	103	105	70-130	2	20	

### REPORT OF LABORATORY ANALYSIS



### QUALITY CONTROL DATA

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

QC Batch:	MPRP/25803	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET Dissolved
Associated Lab Samples:	60160522003		

METHOD BLANK: 1314393      Matrix: Water  
Associated Lab Samples: 60160522003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Zinc, Dissolved	ug/L	4.0J	10.0	01/06/14 17:15	

LABORATORY CONTROL SAMPLE: 1314394

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Zinc, Dissolved	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1314395      1314396

Parameter	Units	60160522003		MS		MSD		MS		MSD		% Rec Limits	Max		Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	RPD	RPD				
Zinc, Dissolved	ug/L	18.8	100	100	118	118	99	99	70-130	0	20				

### REPORT OF LABORATORY ANALYSIS



### QUALITY CONTROL DATA

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

QC Batch: MPRP/25778 Analysis Method: EPA 6010  
QC Batch Method: EPA 3010 Analysis Description: 6010 MET  
Associated Lab Samples: 60160522003, 60160522004

METHOD BLANK: 1313405 Matrix: Water  
Associated Lab Samples: 60160522003, 60160522004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	01/03/14 10:22	
Magnesium	ug/L	ND	50.0	01/03/14 10:22	
Total Hardness by 2340B	ug/L	ND	500	01/03/14 10:22	

LABORATORY CONTROL SAMPLE: 1313406

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9620	96	80-120	
Magnesium	ug/L	10000	10100	101	80-120	
Total Hardness by 2340B	ug/L		65800			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1313407 1313408

Parameter	Units	60160532001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	28100	10000	10000	37200	37600	91	95	75-125	1	20	
Magnesium	ug/L	4780	10000	10000	14600	14700	98	99	75-125	1	20	
Total Hardness by 2340B	ug/L	89800			153000	154000				1		

### REPORT OF LABORATORY ANALYSIS



### QUALITY CONTROL DATA

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

QC Batch: WET/45487 Analysis Method: SM 2540D  
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids  
Associated Lab Samples: 60160522001, 60160522002, 60160522003, 60160522004

METHOD BLANK: 1314346 Matrix: Water  
Associated Lab Samples: 60160522001, 60160522002, 60160522003, 60160522004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	5.0	01/06/14 13:50	

SAMPLE DUPLICATE: 1314347

Parameter	Units	60160522001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		25	

SAMPLE DUPLICATE: 1314348

Parameter	Units	60160563004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		25	

### REPORT OF LABORATORY ANALYSIS





## QUALITY CONTROL DATA

Project: NPDES Monthly (Leadwood)

Pace Project No.: 60160522

QC Batch: WETA/27759

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60160522001, 60160522002, 60160522003, 60160522004

METHOD BLANK: 1315666

Matrix: Water

Associated Lab Samples: 60160522001, 60160522002, 60160522003, 60160522004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	01/10/14 09:31	

LABORATORY CONTROL SAMPLE: 1315667

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1314803 1314804

Parameter	Units	60160344001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Sulfate	mg/L	1060	500	500	1580	1580	105	105	80-120	0	15

MATRIX SPIKE SAMPLE: 1314805

Parameter	Units	60160344002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	1140	500	1550	80	80-120	

## REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.  
ND - Not Detected at or above adjusted reporting limit.  
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.  
MDL - Adjusted Method Detection Limit.  
PRL - Pace Reporting Limit.  
RL - Reporting Limit.  
S - Surrogate  
1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.  
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
LCS(D) - Laboratory Control Sample (Duplicate)  
MS(D) - Matrix Spike (Duplicate)  
DUP - Sample Duplicate  
RPD - Relative Percent Difference  
NC - Not Calculable.  
SG - Silica Gel - Clean-Up  
U - Indicates the compound was analyzed for, but not detected.  
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
TNI - The NELAC Institute.

### LABORATORIES

PASI-K Pace Analytical Services - Kansas City

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.  
D9 Dissolved result is greater than the total. Data is within laboratory control limits.

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NPDES Monthly (Leadwood)  
Pace Project No.: 60160522

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60160522003	LEADWOOD UPSTREAM	EPA 3010	MPRP/25778	EPA 6010	ICP/19770
60160522004	LEADWOOD DOWNSTREAM	EPA 3010	MPRP/25778	EPA 6010	ICP/19770
60160522001	LEADWOOD 001	EPA 200.8	MPRP/25783	EPA 200.8	ICPM/2765
60160522002	LEADWOOD 002	EPA 200.8	MPRP/25783	EPA 200.8	ICPM/2765
60160522003	LEADWOOD UPSTREAM	EPA 200.8	MPRP/25783	EPA 200.8	ICPM/2765
60160522004	LEADWOOD DOWNSTREAM	EPA 200.8	MPRP/25783	EPA 200.8	ICPM/2765
60160522003	LEADWOOD UPSTREAM	EPA 200.8	MPRP/25790	EPA 200.8	ICPM/2766
60160522003	LEADWOOD UPSTREAM	EPA 200.8	MPRP/25803	EPA 200.8	ICPM/2767
60160522004	LEADWOOD DOWNSTREAM	EPA 200.8	MPRP/25790	EPA 200.8	ICPM/2766
60160522001	LEADWOOD 001	SM 2540D	WET/45487		
60160522002	LEADWOOD 002	SM 2540D	WET/45487		
60160522003	LEADWOOD UPSTREAM	SM 2540D	WET/45487		
60160522004	LEADWOOD DOWNSTREAM	SM 2540D	WET/45487		
60160522001	LEADWOOD 001	SM 2540F	WET/45440		
60160522002	LEADWOOD 002	SM 2540F	WET/45440		
60160522001	LEADWOOD 001	EPA 300.0	WETA/27759		
60160522002	LEADWOOD 002	EPA 300.0	WETA/27759		
60160522003	LEADWOOD UPSTREAM	EPA 300.0	WETA/27759		
60160522004	LEADWOOD DOWNSTREAM	EPA 300.0	WETA/27759		

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# Sample Condition Upon Receipt

WO#: 60160522



60160522

Client Name: The Doe Run

Courier: Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 7975 2444 5742 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other Zip

Thermometer Used: F-239 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.

Cooler Temperature: 5.4

Date and initials of person examining contents: 8/12/31

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <u>Self Scrap</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses	Matrix: <u>W-1</u>	15.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	18.
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	19.
Pace Trip Blank lot # (if purchased):		20.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	21.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	22. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_ Date: \_\_\_\_\_



